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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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08/893,917

07/11/1997

KARL A. LITTAU

AM2119/T2130

8435

57385

7590

06/12/2008

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EXAMINER

ZERVIGON, RUDY

ART UNIT

PAPER NUMBER

1792

MAIL DATE

DELIVERY MODE

06/12/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 08/893,917	<b>Applicant(s)</b> LITTAU ET AL.	
	<b>Examiner</b> Rudy Zervigon	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 16-20,22-24,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) 16-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-24,27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 July 1997 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. This application contains claims 16-20 drawn to an invention nonelected with traverse in Paper No. March 3, 2006. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

### ***Claim Rejections - 35 USC § 102***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 22-24, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Shang; Quanyuan et al. (US 5788778 A). Shang teaches a method (column 4, lines 23-63; column 6, lines 13-23) of removing residue from a substrate processing chamber (10; Figure 1; column 4, lines 4-15), said method (column 4, lines 23-63; column 6, lines 13-23) comprising the steps of: forming a plasma remotely (46; Figure 1; column 4, lines 40-53) with respect to said chamber (10; Figure 1; column 4, lines 4-15), said plasma including a plurality of reactive radicals; forming a flow of said reactive radicals traversing toward said chamber (10; Figure 1; column 4, lines 4-15); forming a nonplasma (32,34; Figure 1; column 4, lines 23-31) diluent gas flow, wherein said nonplasma diluent gas flow comprises at least one of an inert gas or a reduction gas (hydrogen as reducing gas; column 5, lines 1-5); mixing said flow of said reactive radicals and said diluent gas flow at a mixing location ("T" location at 33) downstream of a location (where "57" is detailed) of forming said flow of said reactive radicals and anterior to said chamber (10;

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Figure 1; column 4, lines 4-15) to form a gas-radical mixture; and flowing said gas-radical mixture into said chamber (10; Figure 1; column 4, lines 4-15), as claimed by claim 22

Shang further teaches:

- i. The method (column 4, lines 23-63; column 6, lines 13-23) as recited in claim 22 wherein said flow of reactive radicals and said gas flow are established to maintain a pressure within said chamber (10; Figure 1; column 4, lines 4-15) below one torr (column 5, lines 8-13), as claimed by claim 23
- ii. The method (column 4, lines 23-63; column 6, lines 13-23) as recited in claim 22 wherein said reactive radicals comprise atoms associated with a reactive gas, with said reactive gas being selected from a group consisting of  $\text{NF}_3$  (column 5, lines 8-13), dilute  $\text{F}_2$ ,  $\text{CF}_4$ ,  $\text{C}_2\text{F}_6$ ,  $\text{C}_3\text{F}_8$ ,  $\text{SF}_6$ , and  $\text{ClF}_3$ , as claimed by claim 24
- iii. The method (column 4, lines 23-63; column 6, lines 13-23) as recited in claim 22 wherein said chamber (10; Figure 1; column 4, lines 4-15) has components therein, with a subset of said radicals in said gas-radical mixture reacting with said components creating a residue (column 6, lines 13-23) and further including the step of exhausting said residue, with a rate at which said residue is exhausted depending upon a rate of said diluent gas flow, as claimed by claim 27

***Claim Rejections - 35 USC § 103***

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shang; Quanyuan et al. (US 5788778 A). Shang is discussed above. Shang further teaches “user-selected flow

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rates” (column 4, lines 53-63). Shang does not teach the method (column 4, lines 23-63; column 6, lines 13-23; column 6, lines 32-39) as recited in claim 22 wherein said diluent gas flow travels at a first rate and said flow of said reactive radicals travel at a second rate with a ratio of said first rate to said second rate being at least 2:1, as claimed by claim 28.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the relative flow rates of Shang’s gas sources.

Motivation to optimize the relative flow rates of Shang’s gas sources is for “achieve optimum of performance for a particular system” as taught by Shang (column 6, lines 32-39). It would be obvious to those of ordinary skill in the art to optimize the operation of the claimed invention (In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980); In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969); Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990), MPEP 2144.05).

### ***Response to Arguments***

6. Applicant's arguments filed March 5, 2008 have been fully considered but they are not persuasive.

7. Applicant states:

“

However, nonplasma diluent gas flow is not provided at elements 32 and 34. Elements 32 and 34 of Shang provide deposition gases. There is no discussion in Shang of inert or reduction gases being provided at elements 32 and 34.

“

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In reponse, the Examiner applies Shang as teaching the claimed features. Applicant has not provided the distinction between “diluent gas” and “inert or reduction gases” as suggested by Applicant. Accordingly, the Examiner believes Shang either anticipates or renders obvious the claimed invention.

***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Friday schedule from 9am through 5pm. The official fax phone number for the 1792 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner

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can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435

/Rudy Zervigon/

Primary Examiner, Art Unit 1792